DOCUMENT RESUME

ED 293 812 SP 030 140

AUTHOR Vickery, Tom Rusk
TITLE Evaluating a Mastery Learning High School.
PUB DATE 87
NOTE 14p.; Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987). For related documents, see SP 030 141-142.
PUB TYPE Speeches/Conference Papers (150) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Aspiration; College Bound Students; Comparative Analysis; *High School Graduates; High Schools; *Institutional Evaluation; *Instructional Effectiveness; *Mastery Learning; Outcomes of Education; Student Attitudes; Teaching Methods

ABSTRACT

This paper compares the educational outcomes and student aspirations of graduates from three typical upper middle class high schools and an atypical lower middle class high school that used Mastery Learning to guide the delivery of instruction. The Johnson City School District (JCSD) in New York has used this form of instruction through the first 12 years of school. The graduates of Johnson City High School have been taught over the course of their schooling that mastery was a function of time and effort, not normally distributed aptitude, and that whatever opportunities there are in the school and afterwards are open to as many students as possible. There will be variability in achievement, but it cannot be easily explained on the basis of race or social class. A comparison of data describing the graduates of the four school districts showed that JCSD's high school does not graduate cohorts of students that mirror the graduating classes of the three more affluent districts, but there are definite and encouraging trends which indicate that JCSD graduates have higher achievement and aspirations. (JD)

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EVALUATING A MASTERY LEARNING HIGH SCHOOL

Tom Rusk Vickery

Syracuse University

SP 030140

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EVALUATING A MASTERY LEARNING HIGH SCHOOL

Two sets of issues must be considered in evaluating a high school which uses mastery learning [ML] to guide the delivery of instruction. First, there are the general problems of evaluating high schools, and second, there are the more particular problems that grow out of the fact that the high school being evaluated uses mastery learning as the basic instructional management system. All illustrations in the discussion that follows will be drawn from my research the past two and one-half years in the Johnson City (New York) Central School District (JCSD). However the Johnson City data are used to illustrate the problems of evaluating a mastery learning high school; the report of such data is not the primary purpose of this paper.

Basic to any application of ML is the concern for effectiveness: ML is first and foremost an instructional management system based on the assumption that if a set of objectives is appropriate both for the intended learners and for the instruction used, then with proper feedback and correctives, most students can master those objectives. In training applications in industry and in isolated use in individual classrooms in schools, this is the primary and perhaps the only concern.

However in any large scale or system wide application, other concerns appear. Changed patterns of achievement will influence student progress at subsequent stages of instruction. Thus if the

SP030140

Paper presented at the Annual Meeting of the American Educational Research Association, Washington, D.C., 1987.

elementary schools of a district implement ML successfully, the nature of the cohorts received by the middle schools and high schools will change, as will student expectations of how schooling will be conducted. Not only will participation in ML skew the curve such that the high school has to deal with an atypical group of students, but those students will place pressures on the high school to be atypical also. For example, an experienced teacher new to the faculty of the high school and new to ML was greeted with howls of protest when she recorded the grades on the formative examinations with the obvious intention of averaging them into the course grade. The department chairman had assumed that she understood the instructional process used in the high school. He had given her unit guides for the courses she was teaching but had failed to explain what a formative test was or how it was used. However the students knew how the instructional game was to be played and let the teacher know in short order that there was a different and better way to do things. The teacher went to the department chairman, who verified the accuracy of the student claims; then the teacher changed her use of the formative tests and the teaching-learning process continued. Clearly the students had such strong expectations that there would be formative examinations and corrective instruction prior to the certification of achievement at the end of the unit that they were able to change the behavior of the teacher to be more nearly consistent with the ML procedures to which they had been accustomed throughout their elementary and middle school years.

Analogously there are differences in the way one looks at the graduates of a high school that uses ML as well as differences in the way the graduates may approach the world. When the first class that had known ML for the full twelve years graduated from Johnson City High School, the valedictorian questioned in his speech whether the world was ready for himself and his peers because they were the first graduating class that had been taught for twelve years that they could not fail. This may have been only ceremonial hyperbole, but at least that graduating senior had grasped something very special about their experiences with ML. There was no question as to whether they were competent to face the world. Rather because they had been taught that mastery was a function of time and effort, not normally distributed aptitude, they might reasonably approach the world with different expectations than would other high school graduates.

My point here is that there is a cumulative effect from the large scale application of ML that results in a whole that is greater than its parts. Teachers teach differently and kids learn differently, and as a logical consequence one would expect a ML high school to be a good school; that is, one that holds open the largest possible number of educational opportunities for the greatest number of students for the longest period of time. This means that kids are not grouped into the red birds, blue birds, and turkeys at some point and then provided differing curricula that guarantee different and unequal outcomes for the students. Rather the school makes an effort to see that whatever opportunities there are in the school

and afterwards are open to as many students as possible. There will be variability in achievement but it cannot be easily explained on the basis of race or social class.

We have constructed a system of institutionalized excuses for not achieving such goals. In the case of a district like Johnson City we have the modest expectations "appropriate" for a lower middle class community with virtually no managerial or professional citizens. It still bears the imprint of George F. Johnson, head of the Endicott-Johnson shoe company, whose family name graces the town, the school district, and three of the four schools; who would come to the high school to dissuade the students from any aspirations for college, telling them that if his shoe factories were good enough for their parents, they were good enough for them. Mr. Johnson was a pioneer in providing medical benefits, parks, and subsidized housing and food for his workers, but he had no use for unions or colleges.

The easy effectiveness question could be answered by standardized test scores, were there such, for the high school students. The major public validation of the Johnson City elementary and middle schools is based on such scores. But even if these scores existed for the high school, they would not address such things as aspiration levels of the graduates or the district's success in achieving its own mission that all students will learn well what the schools want them to learn. How does one determine if the high school is making differences in the lives of its graduates that are

more important than improved grade equivalent scores on standardized tests? Were the JCSD graduates to have high scores on some nationally recognized standardized test but not have the aspirations or post-secondary acheivements to do with them, then one would have to question the extent to which the elevated scores really meant anything in this lower middle class community.

I have been studying JCSD in the context of the eleven other school districts which are in Broome County. These range from the high poverty schools from tiny rural districts and from the urban schools of Binghamton to the relatively affluent upper middle class districts where the majority of the professional people and the engineers and managers from IBM and GE live. Traditional practice would compare JCSD with its socioeconomic peers and give it a gold star. However the Johnson City High School is a mastery learning high school in a mastery learning district, and thus equity requires a higher standard. Thus what I propose in such a situation is to compare it with the high schools of the three upper middle class districts in the county in order to determine the extent to which it has provided that equity of achievement which Ron Edmonds proclaimed as goal.

The best data available, which describe the graduates of the four districts, show that JCSD's high school does not graduate cohorts of students that mirror the graduating classes of the three more affluent districts, but there are definite and encouraging trends

which indicate that JCSD graduates have higher achievement and aspsirations.

The programs and requirements of the Regents of the State of New York provide one set of comparisons. The Regents have set minimum requirements for a regents diploma that are expressed in terms of the number and kind of courses students must take and in terms of scores on state-wide regents examinations. Students may get what is called a local diploma and graduate from high school, but admission to the many campuses of the State University of New York is predicated on having earned a regents diploma. In most high schools in New York there are three versions of many courses: local courses, which are the least ambitious and which lead to a local dilploma; regents courses, which are designed to prepare students both for college admission and for the regents examinations; and honors courses, which aim well above what is attempted in the regents courses.

JCSD consciously attempts to improve the learning skills of its students to such an extent that local students will gradually move to higher tracks. This can be seen in the diminishing proportion of local courses in recent years. More and more students are getting the regents diploma. In the state less than 50 per cent receive regents diplomas. In JCSD almost 70 per cent get the regents diploma, up from about 60 percent ten years ago. Interestingly enough JCSD's percentage is about fifteen percentage points higher than one of the upper middle class districts and

comparable to that of the other two.

A second Regents program awards scholarships to graduates for high achievement on college admissions examinations. This a completely different kind of comparison and a much tougher standard. First, any student who chooses to take college admissions examinations is automatically in the competition, but only those who take these exams can win scholarships; and second, inasmuch as only a fixed number of scholarships are awarded in each county based on the number of high school graduates living in the county the previous year, it is a zero sum game. A school district can increase the number of regents scholarships its graduates receive only at the expense of some other district(s) in the county. Thus the graduates of a district may improve and score higher on college admission examinations but only if their improvement is greater than the improvement of the graduates in the rest of the county can they increase the number of regents scholarships they receive.

In the past ten years the number of JCSD graduates taking college admissions tests has increased about five percent, but JCSD has more than doubled the percentage of its graduates who win the scholarships. To the extent that this is a valid measure, JCSD's high school is improving the achievement of its graduates. However, so have the other three districts. But where ten years ago fewer than five per cent of JCSD graduates won regents scholarships compared to around ten per cent for the three other districts, in the last four years at least ten percent of JCSD graduates have won regents scholarships, compared to averages of

about 17%, 15%, and 20% for the other three districts. In this zero sum game these four districts are out performing the rest of the county and JCSD is gaining ground on two of them. This would imply that JCSD achievement is higher relative to the rest of the county in general and relative to two of the three upper middle class districts and that the aspiration levels of its graduates, as expressed by the taking of college admissions tests, is rising slightly. When data on regent scholarships are combined with data above on regents diplomas, which certify competence to enter college whether one attends or not, one can see that Johnson City is making its most remarkable progress in keeping open further educational opportunities for that portion of the student population that usually would not have the credentials to go to college. These students may not attend college, but at least they have the credentials to do so if they wish to.

Interestingly enough, although there is no dramatic increase in the percent of students who take college admissions tests, there are changes in the patterns of such aspirations. More students are going to four year colleges. These data are are based on guidance office records of where final transcripts for graduates were sent; there are cases in which students sent final transcripts to a college but did not attend. There are no highly reliable data on college attendance. The vast majority of students who aspire to post-secondary education attend local schools: SUNY Binghamton and Broome County Community College. The former, which is about two miles from Johnson City, has very high admission standards,

higher than those of many more prestigous private universities. However, a greater number of students seem to be aspiring to leave the Binghamton area to attend higher status colleges, as is seen in the increase in the number of final transcripts sent to Cornell (which in reality is still fairly close by), Clarkson, and the University of Rochester in the past few years. According the the guidance office this year may see this trend accelerate. The guidance secretary reported last week that she had sent five transcripts to MIT and single transcripts to Rice, the University of Pennsylvania, Brown, Harvard, and Stanford. The aspiration levels of JCSD graduates seem to be beginning to rise somewhat.

Another interesting look at aspirations and achievement might consider participation in advanced placement courses, in which high school students take college courses in high school. The courses are taught by high school instructors who have been given special training and are supervised by a university faculty. The number of JCSD students participating in advanced placement courses has increased each year for the past six years by about .4% per year; now about 10 per cent of the students take advanced placemend courses. The percent of students who scored 3, 4, or 5 on the examinations, scores which are said to indicate college level achievement, has remained fairly constant at around 75%.

In evaluating a ML high school, one has also to look at the nonacademic objectives that the district has. For example, in JCSD the higher expectations extend also to music and athletics. The

two jazz bands continue to win state awards, and the high school choir was chosen to represent New York State in a competition in Vienna, Austria, two years ago. The community raised the money to send the choir, and the choir responded by winning third place. In the past three years JCSD has won state championships in football, girls' basketball, and boy's wrestling.

The district has as a "desired exit behavior" concern for others, which can be seen in two recent events. In the first JCSD students raised $15,000 by magazine sales, concerts, dances, etc. to help the community build a senior citizens center. In the second, in a countywide contest sponsored by a local radio station to gather food for the needy at Thanksgiving, the JCSD students gathered more food that the other eleven districts combined.

That is hardly an exhaustive list of all the possible ways of evaluating a mastery learning high school, but some of the peculiar evaluation problems that result from a high school's adopting ML as its instructional management system have been identified. First, although standardized test scores are and will continue to be important, because ML is supposed to increase the number of competent students--that is, skew the curve to the left and not just move the mean of a normal curve to the right--one has to look at the total range of achievement and the extent to which opportunities are still open to students at graduation. And one has to look at aspiration levels and the extent to which those aspiration levels are realized. To what extent is excellence

expected in all areas of the life of the school? To what extent has the school confounded resonable expectations of students based on social class?